(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 August 2003 (28.08.2003)

PCT

(10) International Publication Number
WO 03/070562 A1

(51) International Patent Classification[7]: B63B 35/44

(21) International Application Number: PCT/GB03/00585

(22) International Filing Date: 11 February 2003 (11.02.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

0203997.2	20 February 2002 (20.02.2002)	GB
0210978.3	14 May 2002 (14.05.2002)	GB
0214699.1	26 June 2002 (26.06.2002)	GB

(71) Applicant *(for all designated States except US)*: **PS COMTEK LTD** [GB/GB]; 12 Plumtree Court, London EC4A 4HT (GB).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **KERON, Neil, Alexander** [GB/GB]; 4 Conduit Road, Bedgford, MK40 1EQ (GB).

(74) Agents: **HEDGES, Martin, Nicholas** et al.; A.A. Thornton & Co., 235 High Holborn, London WC1V 7LE (GB).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI,

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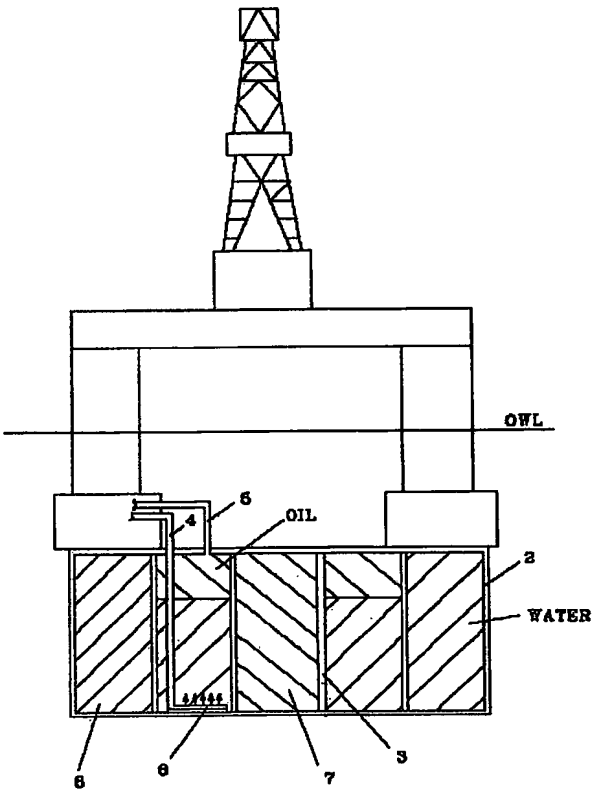
(54) Title: FLOATING SEMI-SUBMERSIBLE OIL PRODUCTION AND STORAGE ARRANGEMENT



(57) Abstract: An arrangement for the storage of marketable quantities of crude oil at a semi-submersible floating production vessel. The storage is achieved by hanging a segmented reinforced concrete tank (2) to the underside of the semi-submersible vessel. The semi-submersible vessel can be an existing semi-submersible drilling rig. By maintaining the mass of the tank and contents slightly greater than the displacement of the tank and by arranging the centre of gravity of the tank below its centre of buoyancy, the metacentric height of the semi-submersible vessel is approved. The storage arrangement for the oil provides the necessary maintenance of mass by either storing approximately 4/5 of the oil in oil-over-water chambers and approximately 1/5 in gas-over-oil chambers or by using a gas-over-oil-over-water arrangement in all the chambers. The piping arrangements minimize the free surface of liquids in the tank. The design ensures the internal pressure in the tank can be less than the external pressure which minimizes required reinforcement. The design provides a net positive suction head to oil export pumps located above the storage tank in a location which allows easy maintenance. The design allows all pumps, valves and instrumentation necessary for handling ballast water to be maintained within the hull of the semi-submersible where they can be easily maintained. The design allows all the valves, pumps and instrumentation necessary for handling oil to be in locations where they can be easily maintained.

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